AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-33 (canceled).

34. (previously presented) An apparatus for applying energy to cause shrinkage of a vein, the apparatus comprising:

a catheter having a shaft with an outer diameter and a working end, wherein the outer diameter of the catheter is less than the inner diameter of the vein; and

at least two electrodes located at the working end of the catheter, wherein the electrodes are spaced apart from one another by less than 180 degrees so as to produce a directional RF field to heat a venous treatment area adjacent the electrodes along a circumferential portion of the vein and not the entire circumference of the vein to cause preferential shrinkage of the vein when RF energy is applied to the vein by the electrodes

35. (withdrawn) The apparatus of claim 34 further comprising a piezoelectric element located adjacent the electrodes, the piezoelectric element producing pulse-echo soundings of the vein to determine the vein diameter and the extent of vein shrinkage.

36. (previously presented) The apparatus of claim 34 further comprising a temperature sensor located on one of the at least two electrodes.

37. (withdrawn) The apparatus of claim 34 further comprising a temperature sensor located between the two electrodes.

38. (previously presented) The apparatus of claim 34 wherein the catheter includes a plurality of extendable members having a plurality of bowable sections, each bowable section including one of the at least two electrodes.

39. (previously presented) The apparatus of claim 34 further comprising:

an outer tube having a first end and a second end, the outer tube surrounding the catheter shaft;

a tip member located at the working end of the catheter shaft;

at least two bowable members, each bowable member having a first mounting end attached to the second end of the outer tube, a second mounting end attached to the tip, and one of the at least two electrodes between the first and second mounting ends;

wherein the outer tube moves over the catheter shaft, and the electrodes move away from the catheter shaft when the second end of the outer tube moves toward the tip.

40. (previously presented) The apparatus of claim 39 further comprising a cover connecting the second end of the outer tube to the tip, wherein the cover prevents fluid from seeping between the outer tube and the catheter shaft.

41. (previously presented) The apparatus of claim 40 wherein the cover comprises a bellows.

42. (previously presented) The apparatus of claim 40 wherein the cover is generally elastic.

43. (previously presented) The apparatus of claim 34 wherein the working end of the catheter has a diameter larger than the diameter of the remainder of the catheter.

44. (withdrawn) The apparatus of claim 34 wherein the working end of the catheter further includes ports for providing a fluid to the vein during treatment.

45. (withdrawn) The apparatus of claim 34 wherein the catheter further comprises a positioning device disposed such that activating the positioning device controls the position of the working end of the catheter, whereby the working end may be selectively positioned at venous tissue sites.

46. (withdrawn) The apparatus of claim 45 wherein the device is located on the opposite end of shaft from the electrodes to position the electrodes into contact with venous tissue to be treated.

47. (withdrawn) The apparatus of claim 46 wherein the catheter comprises an inflation lumen, the positioning device comprises an inflatable balloon disposed at the working end in fluid communication with the inflation lumen such that the inflation of the balloon may be controlled through fluid in the inflation lumen.

48. (previously presented) The apparatus of claim 34 wherein the electrodes are formed from non-insulated portion of a metallic plate disposed in the working end of the catheter.

49. (previously presented) The apparatus of claim 48 wherein the electrodes are formed into pairs, wherein each pair of electrodes comprises a discrete pair of opposite polarity electrodes and the electrodes within each discrete pair are arranged such that an electrode in one discrete pair is adjacent a like polarity electrode of an adjacent pair.

50. (previously presented) The apparatus of claim 49 comprising an even number of electrodes, wherein said even number comprises at least four, and wherein said even number of electrodes are disposed in a plurality of discrete pairs of opposite polarity electrodes at the working end, said electrodes in each discrete pair being arranged such that an electrode in one discrete pair is adjacent a like polarity electrode of an adjacent pair.

51. (previously presented) The apparatus of claim 34 further comprising an ultrasonographic imaging apparatus disposed so as to determine the occurrence of shrinkage of the vein.

52. (previously presented) The apparatus of claim 34 wherein the electrodes are formed of a material that produces heat upon the application of selected energy to the electrodes.

53. (previously presented) An apparatus for applying energy to cause shrinkage of a vein, the apparatus comprising:

a catheter having a shaft, an outer diameter and a working end, wherein the outer diameter of the catheter is less than the inner diameter of the vein; and

a directional energy application apparatus located at the working end and adapted to deliver energy to a venous treatment area adjacent the working end of the catheter to cause shrinkage of the vein along a circumferential portion of the vein and not the entire circumference of the vein.

54. (withdrawn) The apparatus of claim 53 further comprising a piezoelectric element located on the catheter adjacent the directional energy application apparatus

producing pulse-echo soundings of the vein to determine the vein diameter and the extent of vein shrinkage.

55. (previously presented) The apparatus of claim 53 wherein the working end of the catheter has a diameter larger than the diameter of the remainder of the catheter.

56. (withdrawn) The apparatus of claim 53 wherein the working end of the catheter further includes a port for providing a fluid to the vein during treatment.

57. (withdrawn) The apparatus of claim 53 wherein the catheter further comprises a positioning device such that activating the positioning device controls the position of the working end of the catheter, whereby the working end may be selectively positioned at venous tissue sites.

58. (withdrawn) The apparatus of claim 57 wherein the positioning device is located on the opposite side of the shaft from the directional energy application apparatus to position the directional energy application apparatus into contact with venous tissue to be treated.

59. (withdrawn) The apparatus of claim 58 wherein the catheter comprises an inflation lumen, the positioning device comprises an inflatable balloon disposed at the working end in fluid communication with the inflation lumen said that the inflation of the balloon may be controlled through fluid in the inflation lumen.

60. (previously presented) The apparatus of claim 53 wherein the directional energy application apparatus includes a non-insulated portion of a metallic plate disposed in the working end of the catheter.

61. (previously presented) The apparatus of claim 53 wherein the electrodes are formed of a material that produces heat upon the application of selected energy to the electrodes.

62. (withdrawn) The apparatus of The apparatus of claim 53 wherein the directional energy application apparatus comprises a device providing optical energy.

63. (withdrawn) The apparatus of claim 62 further comprising:

a source of optical energy;

a conducting device conducting optical energy from said source to said working end; and

a radiating device located at said working end for directing said optical energy from the catheter in a selected direction.

64. (withdrawn) The apparatus of claim 63 wherein the radiating device comprises an optical reflector located at the working end and disposed to directionally emit optical energy from the working end.

65. (previously presented) The apparatus of claim 53 wherein the directional energy application apparatus comprises at least two pairs of electrodes disposed at the working end, wherein each pair of electrodes comprises a discrete pair of opposite polarity electrodes and the electrodes within each discrete pair are arranged such that an electrode in one discrete pair is adjacent a like polarity electrode of an adjacent pair.

66. (previously presented) The apparatus of claim 65 wherein the directional energy application apparatus comprises an even number of electrodes, wherein said even number comprises at least four, and wherein said even number of electrodes are disposed

in a plurality of discrete pairs of opposite polarity electrodes at the working end, said electrodes in each discrete pair being arranged such that an electrode in one discrete pair is adjacent a like polarity electrode of an adjacent pair.

67. (previously presented) The apparatus of claim 53 further comprising an ultrasonographic imaging apparatus disposed so as to determine the occurrence of shrinkage of the vein.

68. (currently amended) An apparatus for applying energy to biological tissue, comprising:

a catheter having an elongated body with a distal end and a proximal end;

at least four exposed, electrically conductive surfaces located at the distal end of the catheter; and

an outer tube having a first end and a second end, the outer tube surrounding the catheter [[shaft]];

a tip located at the working end of the catheter [[shaft]]; and

a cover connecting the second end of the outer tube to the tip;

wherein the exposed surfaces are disposed so that each exposed surface is located adjacent another exposed surface of like polarity and adjacent another exposed surface of unlike polarity;

whereby energy imparted by a pair of exposed surfaces of unlike polarity is directional.

69. (withdrawn) The apparatus of claim 68 further comprising a positioning device located at the working end of the catheter that is selectively actuatable so as to position the conducting surfaces at a selected biological tissue sight.

70. (withdrawn) The apparatus of claim 69 wherein the positioning device comprises an inflatable balloon disposed on the catheter body opposite the conducting surfaces.

71. (withdrawn) The apparatus of claim 69 wherein the positioning device comprises an expandable strut disposed on the catheter body opposite the conducting surfaces, wherein the strut may be moved outwardly from the catheter body moved inwardly toward the catheter body.

72. (previously presented) The apparatus of claim 68 wherein the positioning device comprises a control wire attached to the distal end of the catheter and disposed within the catheter such that changing its tension controls the deflection of the catheter distal end.

73. (previously presented) The apparatus of claim 68 further comprising an energy source having two potentials, one of which is connected to two exposed surfaces through a conductive device and the other of which is connected to the other two exposed surfaces through another conductive device.

74. (previously presented) The apparatus of claim 68 wherein the exposed surfaces are disposed at the distal end of the catheter as discrete pairs with each pair comprising one surface of one polarity and another surface of a different polarity;

wherein the pairs are disposed in relation to each other so that the exposed surface of an adjacent pair is of like polarity.

75. (withdrawn) The apparatus of claim 68 further comprising a temperature sensor located on one of the electrodes.

76. (withdrawn) The apparatus of claim 68 further comprising a temperature sensor located between two electrodes.

77. (previously presented) The apparatus of claim 68 wherein the catheter includes a plurality of extendable members having a plurality of bowable sections, each bowable section including one of the electrically conductive surfaces.

78. (currently amended) The apparatus of claim 68 further comprising:

at least two bowable members, each bowable member having a first mounting end attached to the second end of the outer tube, a second mounting end attached to the tip, and having one of the electrically conductive surfaces located between the first and second mounting ends;

wherein the outer tube moves over the catheter [[shaft]], and the electrically conductive surfaces move away from the catheter [[shaft]] when the second end of the outer tube moves toward the tip.

79. (currently amended) The apparatus of claim 78 wherein the cover prevents fluid from seeping between the outer tube and the catheter [[shaft]].

80. (previously presented) The apparatus of claim 79 wherein the cover is generally elastic.

81. (previously presented) The apparatus of claim 79 wherein the cover comprises a bellows.

82. (previously presented) The apparatus of claim 68 further comprising an ultrasonographic imaging apparatus disposed so as to determine the occurrence of shrinkage of the vein.

83. (previously presented) The apparatus of claim 34 wherein the electrodes are configured so as to not penetrate the vein.

84. (previously presented) The apparatus of claim 53 wherein the directional energy application apparatus is configured so as to not penetrate the vein.